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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,292	11/13/2003	Sang Ho Lee	K-0547	5772

34610                      7590                      07/03/2006

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EXAMINER  
HOLTON, STEVEN E

ART UNIT	PAPER NUMBER
2629	

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/706,292	<b>Applicant(s)</b> LEE, SANG HO	
	<b>Examiner</b> Steven E. Holton	<b>Art Unit</b> 2629	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 13-18 is/are rejected.
- 7) ☒ Claim(s) 10-12 and 19-21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 19 is objected to because of the following informalities: the claim recites “a first capacitor coupled to the PCP pattern...” The Examiner notes that it should be PCB as used in the other claims. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Furuhashi et al. (USPN: 6151232), hereinafter Furuhashi.

Regarding claim 1, Furuhashi discloses a power control system for a LCD monitor with a light source (Fig. 14, element 302), a high-voltage generator for supplying a high voltage to the light source (Fig. 14, element 304), and a feedback control unit that interrupts the operation of the power supply when abnormal voltages are detected (Fig. 14, elements 310, 401, 402, and 403; col. 14, lines 31-42; also Table 1 in col. 15).

The Examiner notes that Furuhashi does not actually show a power supply in the figures, however power is being produced and transmitted to the circuits of figure 14 through the wire labeled Vdd, which is a standard low DC voltage used in integrated circuitry. The Vdd signal feed shows that a power supply is available and inherent within the system described by Furuhashi. The feedback unit acts to turn off the power supplied to the light circuitry (Fig. 14, element 403, the Shut Off circuit) and is therefore operating to interrupt the operation of the power supply, as stated in the limitations of claim 1.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2-9, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuhashi in view of Hachisuka et al. (EP 1385360), hereinafter Hachisuka.

Regarding claim 2, Furuhashi discloses all of the limitations except, "wherein the feedback control unit determines whether the converted high voltage is abnormal or not by analyzing a voltage induced due to the high voltage generated by the high-voltage generator."

Hachisuka discloses a feedback system using an induced voltage from the high-voltage generating circuit (Figs. 5A and 5B). The Examiner notes that Hachisuka states that a feedback current is inducted, but because current and voltage are directly related Hachisuka is also having a feedback voltage inducted in the wire.

At the time of invention it would have been obvious for one skilled in the art to modify the teachings of Furuhashi with the teachings of Hachisuka. The motivation for providing a feedback circuit that does not have to connect with the load circuit and is easily constructed (Hachisuka, col. 5, lines 45-56). Thus it would have been obvious to modify the teachings of Furuhashi with the teachings of Hachisuka to produce the device disclosed in claim 2.

Regarding claim 3, Hachisuka discloses a cable (Fig. 5a, element 36) here the voltage is induced.

Regarding claim 4, the Examiner takes Official Notice that making circuits on printed circuit boards is well known in the art and that it would have been obvious to one skilled in the art that the circuit could be made on a printed circuit board.

Regarding claim 5, Furuhashi discloses a power supply control circuit used to interrupt the operation of the power supply unit (Fig. 14, element 403).

Regarding claim 6, Furuhashi discloses considering abnormal voltage to include high and low voltages (col. 15, Table 1).

Regarding claim 7, Furuhashi disclose considering the voltage to be abnormal when it is less than a predetermined level (Fig. 15, Table 1). If the voltage is small or zero and therefore less than a normal value, the power supply is interrupted.

Regarding claim 8, Furuhashi discloses the power supply control circuit integrated with the power supply unit (Fig. 14, element 403 is part of the power supply and provides control to turn the supply on and off).

Regarding claim 9, the Examiner notes that the power supply of Furuhashi operates in different modes depending on the feedback, which would make the circuit a switching mode power supply.

Regarding claim 13, Hachisuka discloses the light source being an FL tube (abstract line 3). The Examiner notes that FL stands for fluorescent.

Regarding claim 14, the Examiner takes Official Notice that it is well known that cold cathode fluorescent lamps as light sources for liquid crystal display devices.

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Furuhashi in view of Lee et al. (USPN: 5854617), hereinafter Lee.

Regarding claim 15, the Examiner notes that the limitations of the claim are the same as claim 1 with the addition of a direct current to direct current converter circuit to provide a predetermined voltage. Furuhashi discloses all of the limitations of the except the DC/DC converter circuit.

Lee discloses a backlight power supply system with feedback including a DC/DC converter circuit (Fig. 2, element 32).

At the time of invention it would have been obvious to one skilled in the art to modify the teachings of Furuhashi with the teachings of Lee. The motivation for doing so would have been to provide a conversion method for providing the required DC

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voltage levels for the operation of the power supply. A DC/DC converter would be an obvious circuit choice for one skilled in the art to produce the required voltages for operation of a circuit. Thus, it would have been obvious to modify the teachings of Furuhashi with a DC/DC converter as disclosed by Lee to produce a device as disclosed in claim 15.

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Furuhashi in view of Lee as applied to claim 15 above, and further in view of Hachisuka.

Regarding claim 16, the Examiner notes that the limitations of claim 16 are identical to the limitations of claim 5 with the addition of the DC/DC converter in claim 15.

The combination of Furuhashi and Lee fail to disclose a feedback system utilizing an inducted voltage from the high-voltage generator.

Hachisuka as discussed in the rejection for the similar limitations of claim 5 discloses an inductive feedback system for measuring a current and voltage for providing necessary feedback for operating a power supply. Again the Examiner notes that it would have been obvious to one skilled in the art that the circuits taught by Furuhashi, Lee, and Hachisuka could be formed on a printed circuit board.

At the time of invention it would have been obvious to one skilled in the art to combine the teachings of Furuhashi, Lee and Hachisuka. The motivation for providing a feedback circuit that does not have to connect with the load circuit and is easily constructed (Hachisuka, col. 5, lines 45-56). Thus, it would have been obvious to

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combine the teachings of Furuhashi, Lee, and Hachisuka to produce a device as disclosed in claim 16.

Regarding claim 17, Furuhashi discloses the power supply control circuit integrated with the power supply unit (Fig. 14, element 403 is part of the power supply and provides control to turn the supply on and off).

Regarding claim 18, the Examiner notes that the power supply of Furuhashi operates in different modes depending on the feedback, which would make the circuit a switching mode power supply.

#### ***Allowable Subject Matter***

6. Claims 10-12 and 19-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The present invention is directed to a power system with feedback control for a light of a liquid crystal display system. Claims 10 and 19 identify the uniquely distinct features "a first capacitor coupled to the PCP [PCB] pattern for performing alternating current coupling on the induced voltage" and "an integration circuit coupled to the first capacitor for converting the AC-coupled voltage to a DC voltage by integration". The closest prior art, Hachisuka and Furuhashi disclose feedback systems with diodes and other methods of converting current to voltage, either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.



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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven E. Holton whose telephone number is (571) 272-7903. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven E. Holton  
Division 2629  
June 22, 2006

AMR A. AWAD  
PRIMARY EXAMINER

A handwritten signature in black ink, appearing to read 'Amr A. Awad', with a stylized flourish at the end.